

ITS Finland – the dynamic network of excellence in the mobile information society

at the 13. ITS World Congress in London

ITS Finland is a network of 60 members promoting the Finnish expertise in solving traffic and transport problems with information and communication technology. The mission is to promote the development and deployment of intelligent transport systems and services (ITS), and improve the awareness of Finnish ITS expertise.

ITS Finland is presents six partners in the Nordic Pavilion at the 13. ITS World Congress:

- [Ministry of Transport and Communications Finland](#)
- [Finnish Road Enterprise](#)
- [Finnish Maritime Administration](#)
- [VTT Technical Research Centre](#)
- [Noptel](#)
- [Taipale Telematics](#)

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Real-time traffic information in Finland

The Ministry of Transport and Communication Finland is responsible for transport systems and networks, and for the transport of people and goods. Traffic safety, the reduction of environmental nuisance or damage, and the various means of transport themselves all fall within the scope of the Ministry's responsibility. Its duties also include tasks as diverse as overseeing marine and meteorological research and the weather services. The Ministry also looks after issues relating to communications networks, e-commerce and the media. It monitors the working of the communications markets and the development of the Finnish Information Society.

Research and development at the Ministry is geared to supporting the Ministry's political strategies and objectives. The aim is to make sure that the general public as well as business and industry have access to high-quality, safe and affordable transport and communications facilities. For business companies in the transport and communications sector, the aim is to create a more competitive business environment. Research helps to build up the know-how and expertise that is required in the domain of the Ministry, and it has a key supportive role to play in legislation and informed political decision-making.

The research and development programme activities on ITS of the Ministry have systematically focussed on the most essential parts of ITS building blocks in Finland, especially concentrating in the areas where the public sector has a crucial role. The R&D programmes commenced in 1998 in the form of the TETRA programme (1998-2001) developing information infrastructures as well as the framework for operations. The next programme FITS (2001-2004) added ITS services in the focus of the programme. Both programmes encompassed more or less all areas of ITS services in all transport modes. The R&D programme activities continue in 2004-2007 in the form of the R&D programme on real time transport information called AINO. The next step is the development of ITS in the general context of the information society or the ubiquitous society. The goal of AINO is to develop the collection, management and utilisation of real time information in transport and thereby to create prerequisites for concrete ITS services.

To develop ITS services it is essential to establish regulations and practices that encourage their provision and use. The Ministry is responsible for the strategy on ITS and for utilizing telematics as part of its transport policy as well as the regulatory framework required by ITS services. The transport infrastructure administrations subordinate to the Ministry are, in turn, responsible for providing the necessary basic ITS services, undertaking the authority cooperation required for these services, ensuring the availability of the necessary information infrastructures, and disseminating information in a fair and equal manner.

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Mobile alerts for drivers

The Finnish Road Enterprise is market leader in Finland's infrastructure sector and a leading service provider that actively develops innovations for the living environment. Enterprise is actively developing a range of information services for both consumers and transport companies that will enhance traffic flows and improve road safety.

VARO Mobile Traffic Portal provides a car driver with location sensitive information about live and predictive traffic and weather conditions via a mobile phone. It enables traffic information service providers to effectively distribute their map-based services on the mobile handsets, way beyond the limitations of the current WAP and SMS technologies. VARO Mobile Traffic Portal is an on-device portal, which delivers content on the mobile phone through a client-based application.

VARO Mobile Traffic Portal leverages *VARO Traffic Information Platform*, a server side solution, which enables efficient management and multi-channel delivery of traffic related data feeds and related content. The Platform can easily be integrated with the legacy logistics, transportation and navigation systems as well as leveraged in publishing traffic and weather condition information in various channels such as Web, e-mail, SMS, MMS, WAP, Teletext, Digital TV and Mobile TV.

The combination of road and weather condition data is created through the unique know-how of traffic and weather data processing of the VARO Alert Centre of The Finnish Road Enterprise and The Finnish Meteorological Institute.

VARO Traffic Information Service portfolio includes also further traffic and weather information management related products and consulting services for governments, cities, logistics companies, harbours, transportation companies, car navigation manufacturers, media companies, mobile handset manufacturers and mobile operators.

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Architecture on the Finnish waters

The Finnish Maritime Administration has invested in the telematic architecture of the Finnish sea transport system and implemented the findings in several different ways. The main initiatives are:

- a national true single window application for all the required notices to authorities, at ship arrivals and departures, called PortNet

- an advanced national VTS, covering all Finnish waterways used by merchant traffic, including inland waterways
- a ship reporting system covering the international waters of the Gulf of Finland, called GOFREP

PortNet distributes the information received by notices to all concerned authorities in addition to all the relevant parties within the port environment. The system covers about 99% of all the traffic and has about 1000 online users every day. A number of ports are using the information as a basis of invoicing port charges. The system enables the Customs to perform risk analysis of arriving ships prior to arrival. The PortNet system is presently owned by the Customs, the FMA and the 20 largest ports, but is operated by the FMA. The accumulated cost of the system is at present 1 M€. The system has been delivered by AtBusiness Oyj.

The VTS system consists presently of 5 VTS centres, partly interconnected. The system consists of, in addition to the fore mentioned 5 VTS centres, of 80+ radar stations, 31 AIS-stations and 30 video cameras and a remotely controlled VHF radio network. The AIS base station network is totally fully integrated and connected to the Helcom AIS network around the Baltic Sea. The accumulated cost is at present 20 M€. The system has been delivered by Navielektro Ky.

The GOFREP system was developed as common project between Estonia, Finland and Russia. It enables the possibility to share all the information between these countries both from the different reports received from ships as well as violations against rules detected. The cost for Finland is at present 100 k€. The system has been delivered by Navielektro Ky.

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Analysis and system design at VTT

VTT Technical Research Centre of Finland (VTT) is a contract research organisation involved in many international assignments. With its more than 2800 employees, VTT provides a wide range of technology and applied research services for its clients, private companies, institutions and the public sector. VTT is striving to improve the well-being of society and to enhance the technical and economic performance of its clients.

The main clients of VTT in the area of transport research are ministries, road, rail and aviation authorities, cities, private companies and international organisations. VTT has participated actively in the European Commission's Fourth, Fifth and Sixth Framework Programmes as a partner or project co-ordinator in several transport related projects as well as in the TEN-T and TEN-Telecom programmes. VTT has particularly wide range of experience in the field of transport policy and the development of assessment methodologies. Activities include scientific work and practical applications both in domestic and in international projects.

The ITS research expertise at VTT consists of 25 researchers and the main ITS research areas are:

- human-technology interaction
- information systems for vehicles and traffic
- technical, impact and socio-economic assessment of ITS services
- driver support systems
- vehicle navigation
- traffic environment observation
- vehicle control systems and sensor technology

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Laser distance measurement from Noptel

Noptel is a manufacturer of applied optoelectronic devices for the performing of a wide range of geometrical measurements as distance, position, displacement, deflection, vibration, profile, etc. Noptel's range finder technology is most competitive in applications requiring fast and non-contact, eye-safe range finding to natural targets with mm/cm-level accuracy over short and long distances, and also small size, low power consumption and use out of doors or in otherwise harsh environments.

Based on 25 years experience and the recent co-operation with partners on the traffic control, the company has developed laser sensors for vehicle speed measurement and LPR camera triggering. The latest products are **CM2-30 Range finder**, a small, integrated sensor with narrow laser beam, to be used as a speed trigger or profile measurement unit for traffic control systems and **CMP2-30 Range finder** with wide laser beam, to be used as a speed measurement unit or fast camera trigger for traffic control systems. Due to the problems in maintaining loops, laser sensory equipment is increasingly being used in many projects, especially where ease of maintenance is crucial. Asia has been a traditionally strong area for Noptel with hundreds of installations covering many cities. At the moment the company has partners for traffic control in South Korea, China, Spain, Germany, Austria, Italy, USA, South Africa, Australia and Brazil etc.

Noptel is continuously looking for new OEM partners and works with local and international partners, giving them the option of selling the products under their own brand name. Partners are companies, who are working in the traffic control area, delivering products, like camera systems or other control systems for the customers.

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Enhanced information assisting drivers

Taipale Telematics is committed to improve the safety, economics in traffic. Taipale ADAS concept is built on technology that can be used for several control and warning purposes. Two main applications are the acoustic safety control for tires and rims (ATMOS) and the driving ability monitoring system for the driver (DRIAB). These applications have been delivered to Finnish bus and truck operators.

Tread separation, sudden loss of tyre pressure and locking of brakes, among other tyre and wheel related malfunctions, lead to numerous accidents all over the world. At best case these accidents lead only to economical losses in form of material damage and delay, while the worst cases increase the number road fatalities. In case the driver had more information of the status of the wheels, many of these damages could be avoided. For instance, detecting a sound suggesting that the tyre tread is about to separate within soon, or alerting the driver about a locked-up air-operated brake or loose wheel bolts before further damage has occurred will result in immediate improvement of road safety. The **Acoustic Tyre Monitoring System (ATMOS)** monitors the sound of each wheel while the vehicle is on the road, providing processed real-time information in form of warning signals and recommendations to the driver. It can be integrated with existing vehicle systems and on-board computers, for both after market and OEM installations.

The Senior is the first commercial version of the DRIAB. The Senior offers a new, unique and practical tool for *continuous follow-up and training* of professional drivers into an economic, safe,

comfortable and environmental friendly way of driving. The device includes e.g. a 3-axle acceleration measuring unit and several analog and digital inputs for auxiliary sensors. Real-time data, including combined information of driver's actions and vehicle's movements, is analyzed and classified with efficient statistical and fuzzy-logic algorithms for reliable and fast performance. The driver receives live feedback and guidance of his/her driving while analyze-based construction of performance index is reported by a web service. On-line feedback and generated reports give driver objective information of improvement of personal skills, as well as help the owner in managing their personnel and fleet. The Sensor can be expanded with many optional modules.

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